

What is claimed is:

1. A copper-clad board suitable for making a hole with a carbon dioxide gas laser, which copper-clad board is obtained by disposing a double-side-treated copper foil provided with a metallic-treatment layer having a high absorption rate of a carbon dioxide gas laser energy on at least one surface, at least on an outer layer of a thermosetting resin composition layer such that the metallic-treatment layer is formed on a shiny surface of the copper foil which shiny surface is to be a surface layer, and laminate-forming the double-side-treated copper foil and the thermosetting resin composition layer under heat and pressure, to make an alloy of the metallic-treatment layer and the copper by the above heating.

2. A copper-clad board according to claim 1, wherein the metallic-treatment layer is a layer which contains nickel or nickel and cobalt as essential components.

3. A copper-clad board according claim 1, wherein the thermosetting resin composition is a resin composition containing a polyfunctional cyanate ester monomer and/or a prepolymer of said cyanate ester as essential components.

4. A copper-clad board according to claim 1, wherein the thermosetting resin composition contains 10 to 80 % by weight of an insulating inorganic filler.

5. A copper-clad board according to claim 1,

wherein the double-side-treated copper foil is a product formed by attaching a B-staged thermosetting resin composition layer to a surface opposite to the surface having the metallic-treatment layer and heating the 5 resultant set under pressure to make an alloy of the metal of the metallic-treatment layer with the copper.

6. A copper-clad board according to claim 1, wherein the double-side-treated copper foil is an 10 electrolytic copper foil.

7. A copper-clad board according to claim 1, wherein the double-side-treated copper foil is a product formed by attaching a thermosetting resin 15 composition sheet to a surface opposite to the surface having the metallic-treatment layer and heating the resultant set under pressure to make an alloy of the metal of the metallic-treatment layer with the copper.

20 8. A copper-clad board according to claim 7, wherein the thermosetting resin composition sheet is a polyimide film.

9. A copper-clad board according to claim 7, 25 wherein the thermosetting resin composition sheet is a thermosetting resin composition containing a polyfunctional cyanate ester monomer and/or a prepolymer of said cyanate ester as essential components.

30 10. A copper-clad board according to claim 5, wherein the double-side-treated copper foil is a product formed by disposing a protective sheet on the

metallic-treatment surface of the double-side-treated copper foil and partially bonding the protective sheet to the double-side-treated copper-foil.

5 11. A copper-clad board according to claim 10,
wherein the protective sheet is a metal foil or a resin film.

10 12. A copper-clad board according to claim 1,
which is a copper-clad board obtained by the use of a metal-foil-carrier-attached copper foil in which metal foil(s) is/are disposed on one surface or both the surfaces of the double-side-treated copper foil and the metal foil(s) is/are partially bonded to the double-side-treated 15 copper foil.

20 13. A copper-clad board according to claim 12,
wherein the metal-foil-carrier-attached copper foil and the thermosetting resin composition layer are laminate-formed to obtain a copper-clad board and then the metal foil of the carrier is peeled off.

25 14. A copper-clad board according to claim 12,
wherein the metal foil carrier is an aluminum foil having a thickness 200 to 500 μm .

sub B > 15. ~~A method of making a hole in a copper-clad board, in which the metallic-treatment layer surface of the copper-clad board recited in claim 1 is directly irradiated 30 with a carbon dioxide gas laser having an energy sufficient for processing a copper foil by means of the pulse oscillation of the carbon dioxide gas laser, to make a~~

eB penetration hole and/or a blind via hole.

16. A method according to claim 15,
wherein the energy of the carbon dioxide gas

5 laser is 5 to 60 mJ.

17. A method according to claim 15,
wherein, after the hole is made with a carbon
dioxide gas laser, copper foil burrs occurring around the
10 hole are removed and at the same time parts of surface
copper foils are two-dimensionally etched in the thickness
direction.

18. A method according to claim 15,
15 wherein the penetration hole and/or the blind via
hole has a diameter of 80 to 180 μm .

19. A printed wiring board which is prepared by
directly irradiating a copper foil surface of the copper-
20 clad board recited in claim 1 with a carbon dioxide gas
laser having an energy of 10 to 60 mJ, to make a
penetration hole and/or a blind via hole.

20. A printed wiring board according to claim 19,
25 wherein the penetration hole and/or the blind via
hole has a diameter of 80 to 180 μm .

21. A printed wiring board according to claim 19,
wherein, after the hole is made with a carbon
30 dioxide gas laser, copper foil burrs occurring in a hole
portion are dissolved and removed with a chemical and at
the same time parts of surface copper foils are two-

dimensionally dissolved and removed in the thickness direction.

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22. A printed wiring board according to claim 19,
wherein the double-side-treated copper foil
recited in claim 5 is disposed on at least one surface of
an internal board such that the copper foil side faces
outside, the resultant set is laminate-formed under heat
and pressure to obtain a copper-clad board, and the upper
surface of the copper-clad board is directly irradiated
with a carbon dioxide gas laser having an energy sufficient
for making a hole in a copper foil, to make the penetration
hole and or the blind via hole.

15 23. A printed wiring board according to claim 22,
wherein, after the formation of the hole with the
carbon dioxide gas laser, copper foil burrs fluffing on a
hole portion of the copper-clad board are dissolved and
removed with a chemical and at the same time surface copper
foils of the copper-clad board are two-dimensionally
dissolved and removed in the thickness direction to some
extent.

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